Portland Harbor RI/FS Final Remedial Investigation Report Appendix F: BHHRA March 28, 2013

Table 1.2-2

Table 1-1. Chemicals Potentially Posing Unacceptable Risks for Human Health

			В	each Sedim	ent			Surface Water							In-Water Sediment Fish Tissue											Shellfish				
Chemical of Concern	Recreational Beach User	Dockside Worker	Low-Frequency Fisher	High-Frequency Fisher	Tribal Fisher	Transients	Ingestion of Human Milk (Dockside Worker)	ional	Diver in Wet Suit Diver in Dry Suit Potential Future Domestic Water Use In-Water Worker	Low Frequency Fisher High Frequency Fisher Tribal Fisher Diver in Wet Snit	Diver in Dry Suit								Ingestion of Human Milk (In-Water Worker)	Ingestion of Human Milk (Low Frequency Fisher)	Ingestion of Human Milk (High Frequency Fisher)	Ingestion of Human Milk (Tribal Fisher)	Ingestion of Human Milk (Diver in Wet Suit)	Ingestion of Human Milk (Diver in Dry Suit)	Fish Consumption, River Mile Basis Fish Consumption, Study Area-Wide	Tribal Fish Consumption		Ingestion of Human Milk (Non-tribal Consumption)	Ingestion of Human Milk (Tribal Consumption)	Adult Consumption Ingestion of Human Milk (Non-tripal Consumption)
Metals																														
Antimony																											+			
Arsenic	X <sup>b</sup>		X <sup>b</sup>	X <sup>b</sup>	0							X			Xab	X <sup>b</sup>									0	0	#			0
Chromium, hexavalent												X <sup>a</sup>																		
Lead <sup>d</sup>																											Х			
Mercury																									+	+	+			
PAHs																														
Benzo(a)anthracene	X <sup>ab</sup>	Xab										0		$X^{ab}$	Xab	Xab	Xab								X <sup>ab</sup>					0
Benzo(a)pyrene	Op	Oa		X <sup>ab</sup>	X <sup>b</sup>					$X^{ab}$		#	Xab	Op	Op	О	Op	Xab							0	X <sup>c</sup>	Х			#
Benzo(b)fluoranthene	X <sup>ab</sup>	Xab										О		Xab	Xab	Xab	Xab													О
Benzo(k)fluoranthene																														Xª
Dibenzo(a,h)anthracene	X <sup>b</sup>	Xab										О		Xab	Xab	Xab	Xab								X <sup>ab</sup>	X <sup>c</sup>	X			О
Indeno(1,2,3-cd)pyrene	$X^{ab}$	Xab										О		Xab	Xab	Xab	Xab													X
Total Carcinogenic PAHs	О	O <sup>a</sup>	Xab	Xab	X <sup>b</sup>					Xab	$X^{ab}$	#	Xab	Op	Op	#	Op	Xab							0	X	X			#
Phthalates																														
Bis(2-ethylhexyl)phthalate																											О			
SVOCs																														
Hexachlorobenzene																										0	О			
Phenols																														
Pentachlorophenol																														X <sup>a</sup>
Polychlorinated Biphenyls																														
Total PCBs														Xab	Xab	Op	Xab				+ <sup>ab</sup>	+ab	+ <sup>ab</sup>		#	#	#	+	+	# +
Total PCB TEQ														X <sup>ab</sup>	X <sup>ab</sup>	X <sup>b</sup>	Xab								0	#	#	+b	+	O + <sub>p</sub>
Dioxin/Furan																				0.003/003/002/002/02/02/02										
Total Dioxin TEQ													Oab	Oab	Oab	#	Oab	Xab	+ <sup>ab</sup>	+ <sup>ab</sup>	+ <sup>ab</sup>	+ <sup>ab</sup>			#	#	#	+	+	# +b
Pesticides																														
Aldrin																														Xª
Dieldrin																									0	0	0			X
Total Chlordane																										X <sup>c</sup>	X			

Table 1-1. Chemicals Potentially Posing Unacceptable Risks for Human Health

	Beach Sediment							Surface Water				In-Water Sediment										Fish Tissue					Shellfish		
Chemical of Concern	Recreational Beach User	Dockside Worker	Low-Frequency Fisher	High-Frequency Fisher	Tribal Fisher	Transients	Ingestion of Human Milk (Dockside Worker)	Recreational Beach User Transients	Diver in Wet Suit Diver in Dry Suit Potential Future Domestic Water Use In-Water Worker	Low Frequency Fisher High Frequency Fisher Tribal Fisher	Diver in Dry Suit					Stion	⊕	Ingestion of Human Milk (Low Frequency Fisher)	Ingestion of Human Milk (High Frequency Fisher)	Ingestion of Human Milk (Tribal Fisher)	Ingestion of Human Milk (Diver in Wet Suit)	Ingestion of Human Milk (Diver in Dry Suit)	Fish Consumption, River Mile Basis Fish Consumption, Study Area-Wide Tribal Fish Consumption			Ingestion of Human Milk (Non-tribal Consumption)	Ingestion of Human Milk (Tribal Consumption)	Adult Consumption	Ingestion of Human Milk (Non-tribal Consumption)
Гotal DDD																							X <sup>a</sup>	X	О			X	
Гotal DDE																							X	X	О			X	
Fotal DDT																							X	X	О			Xa	
Γotal DDX																													
Herbicides																													
МСРР												+ab																	
Polybrominated Diphenyl Ethers																										+ <sup>ab</sup>			

## Notes

Groundwater seep exposure resulted in no cancer or noncancer exceedances of target risk levels.

## Abbreviations:

- X Chemical exceeds cancer risk of 10<sup>-6</sup> or a hazard quotient of 1 for at least one BHHRA scenario.
- O Chemical exceeds cancer risk of  $10^{-5}$  or a hazard quotient of 1 for at least one BHHRA scenario.
- # Chemical exceeds cancer risk of 10<sup>4</sup> or a hazard quotient of 1 for at least one BHHRA scenario.
- + Chemical exceeds a hazard quotient of 1 for at least one BHHRA scenario, but does not exceed a cancer risk of  $10^{-6}$ .
- a Status is result of target risk or hazard exceedance for two or fewer exposure points.
- b Status is result of target risk or hazard exceedance for RME scenario only.
- c Status is result of target risk or hazard exceedance only for subsistence fish consumption.
- d Status for lead is based on results of predicted blood lead levels.

Shading indicates an exceedance of a hazard quotient of 1 for at least one BHHRA scenario.